2-2010

# PATTERNS OF NONRESIDENT FATHER CONTACT*

Jacob E. Cheadle
*University of Nebraska-Lincoln*, jcheadle2@unl.edu

Paul R. Amato
*Pennsylvania State University*

Valarie King
*Pennsylvania State University*

# PATTERNS OF NONRESIDENT FATHER CONTACT*

JACOB E. CHEADLE, PAUL R. AMATO, AND VALARIE KING

*We used the National Longitudinal Survey of Youth 1979 cohort (NLSY79) from 1979 to 2002 and the Children of the National Longitudinal Survey of Youth (CNLSY) from 1986 to 2002 to describe the number, shape, and population frequencies of U.S. nonresident father contact trajectories over a 14-year period using growth mixture models. The resulting four-category classification indicated that nonresident father involvement is not adequately characterized by a single population with a monotonic pattern of declining contact over time. Contrary to expectations, about two-thirds of fathers were consistently either highly involved or rarely involved in their children's lives. Only one group, constituting approximately 23% of fathers, exhibited a clear pattern of declining contact. In addition, a small group of fathers (8%) displayed a pattern of increasing contact. A variety of variables differentiated between these groups, including the child's age at father-child separation, whether the child was born within marriage, the mother's education, the mother's age at birth, whether the father pays child support regularly, and the geographical distance between fathers and children.*

Changes in family structure during the second half of the twentieth century resulted in large numbers of fathers living apart from their biological children—a unique situation in the history of the American family. The continuing high rate of divorce (Schoen and Canudas-Romo 2006) combined with the dramatic rise in nonmarital births (U.S. Census Bureau 2006: Table 586) means that about one-half of all U.S. children will spend some portion of their pre-adult years residing in single-parent households—usually with their mothers (Bumpass 1990). Another indicator of this trend is reflected in the percentage of all adult men living with biological children, which decreased from 53% in 1965 to 35% in 1995 (Eggebeen 2002).

In addition to documenting changes in family structure, demographers have focused their attention on relationships between nonresident fathers and their children, both in terms of the payment of child support and the frequency of contact (e.g., Bartfeld 2000; Carlson, McLanahan, and England 2004; Nepomnyaschy 2007; Seltzer 1998). Studies of nonresident fathers tend to find positive associations among father involvement; fathers' regular payment of child support; and children's behavioral adjustment, psychological well-being, and academic success (Amato and Gilbreth 1999; Lamb 1991). Despite the apparent advantage of having involved fathers, however, many nonresident fathers have little or no contact with their children. Although many nonresident fathers initially attempt to maintain close ties with their children, some fathers gradually drift apart from their children, with one of the best predictors of contact being the length of time since union disruption (Furstenberg et al. 1983; Maccoby and Mnookin 1992; Seltzer 1991).

The literature on nonresident fathers has led to the impression that a gradual decline in the frequency of contact is the *typical* trajectory after separation (Clarke-Stewart and Brentano 2006:136; Hofferth et al. 2007:337; Ihinger-Tallman, Pasley, and Buehler 1993:553). This conclusion may be misleading, however, because it is based on the mean frequency of contact for all fathers. If nonresident fathers exhibit multiple patterns of

*Jacob E. Cheadle, The University of Nebraska–Lincoln, 737 Oldfather Hall, Lincoln, NE 68588-0324; e-mail: j.e.cheadle@gmail.com; Paul R. Amato, Department of Sociology, Pennsylvania State University; Valarie King, Department of Sociology, Pennsylvania State University. This research was supported by funding from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) to Valarie King, principal investigator (R01 HD43384), and from core funding to the Population Research Institute, The Pennsylvania State University (R24 HD41025). All opinions and errors are the sole responsibility of the authors and do not necessarily reflect those of either the helpful commentators or funding agencies.

contact, then aggregating the data for all fathers into a single group will mask the diversity within this population and lead to misleading conclusions about the most common patterns of contact. Indeed, a few studies have suggested that the frequency of contact following union disruption does not always represent a general decline. For example, using Waves I and II of the National Survey of Families and Households, Manning and Smock (1999) found that 36% of fathers reported no change in contact, 41% decreased their frequency of contact, and 23% increased their frequency of contact. Similarly, using a Canadian data set, Juby et al. (2007) found that 43% of mothers who reported weekly contact in Year 1 reported a decline in contact during the following year. In contrast, among mothers who reported only monthly contact, 35% reported increased contact during the following year. These studies suggest a considerable degree of heterogeneity in fathers' patterns of involvement over time.

In the present study, we use growth mixture models (Muthén 2001, 2002, 2004) to derive a typology of father contact among the Children of the National Longitudinal Survey of Youth 1979. To our knowledge, this is the first study that has attempted to determine the number, nature, and frequency of trajectories of nonresident father contact following separation. To supplement this descriptive analysis, we review the research literature to locate relevant variables that may distinguish between nonresident fathers who follow different trajectories of contact.

## CORRELATES OF PATERNAL CONTACT

The first goal of our investigation—to describe trajectories of nonresident father contact—was largely exploratory. Because existing theory and research has assumed that father contact generally follows a pattern of declining involvement, prior work provides few guidelines for anticipating the number, nature, and frequency of various trajectories. In contrast, our second goal—to describe the characteristics of nonresident fathers who follow different trajectories—draws primarily on prior research. A review of this literature suggests that contact is related to a variety of paternal, maternal, child, family, and contextual factors.

### Children's Ages at Separation

The child's age at the time of separation from the father is likely to be a relevant variable. In general, the longer fathers and children live together, the more opportunities they have to develop close emotional bonds—a principle that should apply to cohabiting as well as married parents. Consistent with this assumption, Stephens (1996) and Aquilino (2006) found that fathers exhibited less-frequent contact when separations occurred relatively early in children's lives.

### Marital Versus Nonmarital Births

Divorced fathers tend to maintain more contact with their children than do fathers who were never married to their children's mothers (Aquilino, 2006; Cooksey and Craig 1998; Furstenberg et al. 1983; Seltzer 1991). Because the majority of divorced fathers live with their children for some period, they have opportunities to enact the paternal role and bond emotionally with their children. Fathers who have never lived with their children lack these opportunities. Of course, a substantial proportion of unmarried fathers cohabit with their children's mothers at the time of birth (McLanahan et al. 2003). Although cohabiting fathers have opportunities to enact the paternal role, cohabiting relationships are less stable than marriages. Data from the Fragile Families study indicate that three years after the child's birth, 49% of cohabiting couples had broken up compared with only 11% of married couples (Osborne, Manning, and Smock 2007). These considerations suggest that fathers who were married to their children's mothers tend to have stronger commitments to their children than do other fathers.

### Parents' Education

Research shows that parental education is positively associated with fathers' participation in child care in married couple families (e.g., Amato et al. 2007). Similarly, many studies show that education is positively associated with the frequency of contact among nonresident fathers (Arditti and Keith, 1993; Cooksey and Craig 1998; Maccoby and Mnookin 1992; Seltzer, Schaeffer, and Charng 1989; Stephens 1996). Irrespective of family structure, well-educated parents, compared with poorly educated parents, may be more likely to accept new social norms about the importance of father involvement in children's lives. Well-educated fathers also may have resources (especially income) that make contact easier, especially if children live some distance from their fathers.

### Parents' Age

Research generally indicates that young fathers (teenagers and men in their early 20s) tend to have less involvement with their children than do older fathers (Parke 1996). Many young fathers are emotionally immature, have low levels of education, earn relatively little income, and are unmarried to their children's mothers. Moreover, births to young parents are especially likely to be unplanned (Barber and Evans 2006). Given these adverse circumstances, it would not be surprising to find that young nonresident fathers tend to have low levels of contact with their children. Although the evidence for this proposition is mixed, a few studies suggest that paternal age is positively associated with the frequency of contact, net of children's ages (e.g., Landale and Oropesa, 2001; Manning, Stewart, and Smock, 2003).

### Fathers' Payment of Child Support

A variety of factors appear to affect fathers' payment of child support, including employment, income, and responsibilities to new families. Nevertheless, many studies have shown a positive correlation between paying child support and the frequency of contact (Furstenberg et al. 1983; Juby et al. 2007; Seltzer et al. 1989). The causal direction between these variables, however, is unclear. Fathers who visit their children frequently may become acutely aware of their children's economic needs and, hence, increase their child support payments. Alternatively, men who pay child support may feel entitled to visit their children, and their children's mothers may agree. More generally, paying child support and maintaining frequent contact may both reflect a strong underlying commitment to one's children. Nepomnyaschy (2007) used cross-lagged models to show that the direction of influence appears to run primarily from formal child support payments to contact. That is, fathers who paid child support regularly tended to increase their frequency of contact over time, whereas fathers' frequency of contact was not related to subsequent patterns of child support payment. A single study, of course, cannot definitely resolve this issue. Despite some ambiguity in the causal status of this variable, we include father's payment of child support because it is likely to distinguish between men who follow different trajectories.

### Children's Gender

Research on married-couple families shows that fathers tend to be more involved with sons than daughters—a trend that grows stronger as children get older (Parke 1996). This gender preference may exist because fathers share more interests with sons than with daughters, mothers encourage fathers to interact more with sons than daughters, or fathers feel obligated to provide male role models for their sons. For these reasons, men may feel more comfortable enacting the paternal role with male children. With respect to nonresident fathers, the evidence is mixed, although some studies show that nonresident fathers have more contact with sons than daughters (Hetherington 1993; Manning and Smock 1999).

### Maternal Repartnering

A number of studies indicate that nonresident fathers tend to have less-frequent contact with their children after mothers remarry or cohabit with new partners (Furstenberg et al. 1983; Juby et al. 2007; Landale and Oropesa 2001; Seltzer et al. 1989; Stephens 1996). Some nonresident fathers may feel either that their role has been usurped by stepfathers or that their involvement is less necessary because their children have a new paternal role model in the household. Correspondingly, some mothers, following union formation, may view nonresident biological fathers as less necessary and, hence, no longer encourage or facilitate contact. These factors are likely to weaken men's motivation to maintain a high level of involvement.

### Geographical Distance From Children

The geographical distance between children's and fathers' households is consistently and negatively associated with the frequency of contact (Arditti and Keith, 1993; Cooksey and Craig 1998; Furstenberg et al. 1983; Manning and Smock, 1999; Seltzer et al. 1989; Stephens 1996). This association may occur for two reasons. On one hand, when mothers initiate the move, the additional time and money necessary to maintain frequent involvement is likely to decrease paternal contact. On the other hand, men with weak commitments to their children may experience few internal constraints on moving away from their children's households, despite the fact that this makes contact more difficult. This interpretation is consistent with Cooksey and Craig (1998), who found that fathers living more than 100 miles away engaged in fewer telephone calls with their children as well as fewer face-to-face visits. Despite questions about the causal direction, we include fathers' proximity to children because it is likely to distinguish between men who follow different trajectories.

### Race and Ethnicity

Although studies are not in agreement, some suggest racial and ethnic difference is paternal contact following union dissolution. For example, a few studies report that black fathers visit their children more frequently than do white fathers (King 1994; Mott 1990; Seltzer 1991). Consistent with this finding, Thomas, Krampe, and Newton (2008) reported that adult blacks who had nonresident fathers while growing up felt significantly closer to their fathers than did their white counterparts. Other studies indicate that Hispanic fathers have relatively low levels of contact (King 1994; King, Harris, and Heard 2004; Seltzer and Bianchi 1988). Given that levels of paternal contact may vary by race/ethnicity, trajectories of paternal contact also may vary across these groups.

### Other Relevant Variables

A variety of other variables are likely to influence the frequency of contact between nonresident fathers and their children. For example, contact appears to be lower when fathers have children in new unions (Manning and Smock 1999), whereas contact appears to be higher when fathers are employed (Landale and Oropesa 2001) and have joint legal or physical custody (Arditti and Keith 1993; Seltzer 1998). Moreover, paternal contact is not always a choice because some fathers may be sent to prison or may be deployed overseas if they are in the military. Unfortunately, we had no relevant information on these (and other) variables in the data set. Consequently, although we include some of the most commonly documented correlates of contact, our analysis is informative but not comprehensive.

## GOALS OF THE CURRENT STUDY

Our study has two central goals. First, we use growth mixture modeling (Muthén 2001, 2002, 2004) to determine the number, nature, and frequency of nonresident father trajectories of contact over a 14-year period. Although many scholars believe that the

typical pattern reflects a gradual decline in involvement, other trajectories are possible. Hetherington and Kelly (2002), for example, discussed "divorce activated" fathers—that is, men who increase their level of involvement over time either because they fear that they are "losing their children," feel more comfortable interacting with children as they grow older, or believe that their influence becomes more important as children age. And, as noted earlier, some studies find a good deal of variability in father contact following union disruption (Juby et al. 2007; Manning and Smock 1999). We know of no prior study, however, that has attempted to delineate the number, shape, and frequency of these trajectories in a systematic manner.

Second, we draw on previous literature to identify variables that may discriminate between fathers who follow different trajectories of involvement. These variables serve as "predictors" of contact trajectories in a multinomial regression analysis, with trajectory membership serving as the dependent variable. We hypothesize that trajectories reflecting high or increasing levels of involvement are more common when children are older at the time of father-child separation, born within marriage, parents are well educated, parents are older at the time of childbirth, fathers pay child support regularly, fathers have sons rather than daughters, mothers have not repartnered, and fathers live in close proximity to their children. Conversely, we hypothesize that trajectories reflecting low or decreasing levels of involvement are more common when children are infants or toddlers at the time of father-child separation, children are born outside of marriage, parents are poorly educated, parents are younger at the time of childbirth, fathers pay little or no child support, fathers have daughters rather than sons, mothers have partnered, and fathers do not live in close proximity to their children. Given the ambiguity surrounding the causal links between some of these variables and father contact, we do not claim to conduct a *causal* analysis. Instead, our goal is to provide a *profile* of characteristics that distinguish between men who follow different contact trajectories.

## DATA AND METHODS

### Sample

The statistical analyses presented below are based on the National Longitudinal Survey of Youth 1979 cohort (NLSY79) from 1979 to 2002 and the Children of the National Longitudinal Survey of Youth (CNLSY) from 1986 to 2002. The NLSY79 originally included a nationally representative sample of 12,686 men and women 14–21 years of age on December 31, 1978. The sample also included oversamples of blacks and Hispanics, economically disadvantaged whites, and military respondents. (The latter two groups were dropped later in the study.) These individuals were interviewed annually through 1994 and once every two years after that. Starting in 1986, the children of female respondents were assessed every two years. Data on these children were collected from mothers and children (depending on children's ages). By 2002, a total of 11,340 children had been identified as being born to the original cohort of women. (An unknown number of children also were born to women who left the survey, subsequent to attrition.) These children represent about 90% of all children who will be born to this cohort of women (Center for Human Resources Research 2004).

We used the NLSY79 data prior to 1986 to obtain information on the mother's partner history and to determine whether a biological father was present in the home (either married or unmarried to the mother), whereas the CNLSY provided data on nonresident father contact and relevant child variables. To be included in the data set, children had to be living apart from their biological fathers in at least one survey year while residing primarily with their mothers. Children whose father died were followed up to the year of death, after which they were coded as missing. A small number of children born prior to 1979 were dropped because of missing data on key variables. Prior to 1986, maternal repartnering history, if

missing, was imputed from adjacent year data when possible. Between 1986 and 2002, children could enter the sample through birth and could age out of the sample after reaching age 19. Some children also left the sample through attrition, and others were truncated in 2002, the final year of data collection used for this study. Consequently, we do not have observations on every child for the entire span of the study or through age 18. Overall, our data set contained 2,377 mothers and 4,864 children who had experienced at least one spell of father nonresidence. This sample of youth with absent fathers represents 43% of all children born to NLSY mothers.

## Attrition and Missing Data

Because the present study involved up to eight observations over 14 years, problems with attrition and other sources of missing data may call into question any inferences based on these data. The issue is complicated because children could enter the analytic sample in any year (if they experienced a separation from their fathers) and could age out of the analytic sample after reaching age 19. Moreover, some children appeared to drop out of the sample in earlier waves but reappeared in later waves in the maternal interviews.

To address this issue, we conducted a detailed analysis of patterns of missingness across all eight waves. Many instances of "missing data" were due either to children aging out of the sample (and, hence, were missing data in later waves) or to children entering the sample after the longitudinal study had been initiated in 1986 (and, hence, were missing data from earlier waves). We constructed four groups for analysis based on the pattern of missingness across 208 missing data patterns: *early coverage* (missing data primarily in the later years of the study), *continuous coverage* (data available more or less throughout the study), *late coverage* (missing data primarily in the early years of the study), and *complex coverage* (inconsistent pattern of missing data). We then estimated growth mixture models separately for the four missing data groups and found that patterns of father contact, as well as the predictors of father contact, were highly consistent. Finally, parameter estimates were relatively consistent across samples, and controlling for the missing data group to which the case belonged in the full sample did not fundamentally alter inferences about the associations between the covariates and patterns of father contact. Overall, our analysis suggested that attrition and other causes of missing data did not affect the results presented later in this article. (These results are summarized in a detailed appendix available from the first author on request.)

## Dependent Variable

We use repeated observations from an eight-category question, implemented between 1986 and 2002, which asked the mother how often the absent father visited the child: (0) *never*, (1) *once in the past 12 months*, (2) *2–6 times in past 12 months*, (3) *7–11 times in past 12 months*, (4) *1–3 times per month*, (5) *about once per week*, (6) *2–5 times per week,* and (7) *almost every day*. Note that this question referred to face-to-face contact and excluded contact by telephone, mail, or e-mail. Children contributed between one and eight observations on this variable, covering a 14-year range after the child was born or the father left the home with data collected every two years. Children contributed a mean of 3.8 observations to the data set (3.6 unweighted). To provide examples of sample sizes, we had contact data for 2,451 children in years 0–2; 2,501 children in years 3–4; 1,812 children in years 12–13; and 1,218 children in years 14–15. Appendix Figure A1 presents the proportion of respondents in each category for the first 4 observation periods.

## Independent Variables

The key independent variable was *time*, which we incorporated on a fixed two-year schedule either (a) after birth, for children born to nonresident fathers, or (b) after the father left the home, for children born to married or cohabiting parents. The timing information was

created by comparing the age of the child with a question documenting whether the child's father resided in the home. For children born prior to 1986, the resident partner or spouse was assumed to be the child's biological father. (This decision may have resulted in some measurement error with respect to when the biological father left the household, although it should not affect the contact variable because this question was asked with reference to the biological father.) Given the two-year schedule of the CNLSY, for most children, the timing of absentee fatherhood was an even number; and for a smaller subset it was an odd number, which created gaps in the covariance coverage and caused estimation problems. To address this problem, children who experienced the departure of a father during odd years were randomly assigned either up or down a year, so the temporal schedule was even for all children (0, 2, 4, 6, 8, 10, 12, 14).

We also included a set of covariates to test the hypotheses described earlier in the literature review. Descriptive statistics and notes on the variable codings are presented in Table 1 along with relevant notes on marital homogamy for variables for which we did not have father information. In addition, missing data constituted less than 1% of observations for most variables across survey waves. The two variables reflecting the father's geographical distance from children were the exceptions, with each having about 9% missing data. To address this problem, we estimated a hidden Markov model to impute father's distance.[1]

## Analysis

We modeled nonresident father contact after birth (if the father never lived with the child) or after the father left the home (if the father was married or cohabiting with the child's mother) using growth mixture modeling (GMM). This approach is conceptually similar to the standard latent growth curve model (LGM) in that it models systematic growth and change in an outcome that has been measured multiple times (Bollen and Curran 2006). Whereas LGM examines change in a single population (described by an overall pattern of change), the GMM fits a nonparametric or semiparametric distribution of growth parameters characterized by discrete clusters of intercepts and slopes. This approach is similar to multigroup LGM (i.e., group-specific growth models) except that the groups are not known in advance and are inferred from the data (Muthén 2001, 2002, 2004).

Following Bollen and Curran (2006:180–81), we modeled nonresident father involvement at Level 1 using multilevel notation as

$$y_{it} = \sum_{g=1}^{G} \pi_i^{(g)} \left[ \beta_{0i}^{(g)} + \beta_{1i}^{(g)} time_{it} + \beta_2^{(g)} time_{it}^2 + \varepsilon_{it} \right] \tag{1}$$

and at Level 2 (between father-child pairs) as

$$\beta_{ji}^{(g)} = \gamma_{j0}^{(g)} + \zeta_{ji}, \quad \text{for } j = 0, 1, \tag{2}$$

$$\beta_2^{(g)} = \gamma_{20}^{(g)}, \tag{3}$$

where $y_{it}$ is father's involvement with child $i$ at time $t$, and $\pi_i^{(g)}$, the mixing proportion, is the probability that child $i$'s father belongs to the $g$th group with $0 \leq \pi_i^{(g)} \leq 1$ and $\Sigma_{g=1}^{G} \pi_i^{(g)} = 1$. According to Eqs. (1)–(3), change in father involvement follows a quadratic growth curve in which initial father contact, $\beta_{0i}^{(g)}$, is allowed to vary across groups ($g$) and between father-child pairs within latent groups (subscript $i$ from Eq. (1)), as denoted by the random effect, $\zeta_{0i}$. Subsequent change as children age is also group-specific, with

1. In this imputation model, we assumed that the father's distance was not directly observed, so we imputed location by using the transition probabilities from the observed data. The hidden Markov model is essentially a pattern recognition model, so our imputation of father distance is based on the general pattern of father's distance over the study period, with the dependence specified between adjacent periods.

**Table 1. Weighted Descriptive Statistics for Covariates**

| Covariates | Mean | SD | Minimum | Maximum |
|---|---|---|---|---|
| Child's Age at Time of Separation[a] | 4.44 | 4.20 | 0 | 18 |
| Child Born Into Marriage | 0.57 | 0.49 | 0 | 1 |
| Mother's Education[b] | 11.78 | 1.89 | 3 | 20.53 |
| Mother's Age at Birth[c] | 23.77 | 5.11 | 11 | 42 |
| Father's Payment of Child Support[d] | 0.54 | 0.50 | 0 | 1 |
| Child Is Female | 0.50 | 0.50 | 0 | 1 |
| Mother Ever Repartnered[e] | 0.47 | 0.50 | 0 | 1 |
| Father Initially Lived > 100 Miles[f] | 0.24 | 0.43 | 0 | 1 |
| Father Averaged Living > 100 Miles[g] | 0.26 | 0.44 | 0 | 1 |
| Child's Race/Ethnicity Black[h] | 0.30 | 0.46 | 0 | 1 |
| Child's Race/Ethnicity Hispanic[h] | 0.09 | 0.29 | 0 | 1 |
| Mean Age Over Study Period | 9.51 | 3.64 | 0 | 18 |
| Number of Observations on $Y$ | 3.81 | 2.03 | 1 | 8 |
| Average Number of Children per Mother | 2.05 | 1.11 | 1 | 9 |
| $N$ | 4,864 | (2,377 Mothers) | | |

[a]In years. This variable is centered at the grand mean for the multinomial models.

[b]In years. This variable is centered at the grand mean for the multinomial models. Because we did not have information on the fathers' education, we relied on a continuous variable reflecting the mother's years of education. Amato et al. (2007) found that husbands' and wives' years of education were correlated at .56, indicating a moderately high level of educational homogamy, and the Fragile Families Study shows a correlation of .41 between cohabiting partners (Reichman et al. 2001).

[c]In years. This variable is centered at the grand mean for the multinomial models. We lacked information on the father's age at the child's birth, so we relied on a continuous variable based on the mother's age at the child's birth. Amato et al. (2007) found a correlation of .86 between husbands' and wives' ages; in the Fragile Families Study, the ages of cohabiting partners correlate at .67 (based on the authors' calculations.). These results indicated that age homogamy is substantial.

[d]Fathers who paid support more than or equal to the median proportion of the years for each child were coded 1, and other fathers were coded 0. Note also that preliminary findings suggested that neither the proportion of the time child support was paid, nor the timing of the mother's remarriage or the number of times the mother remarried added significant information to the model beyond these covariates.

[e]Mother ever cohabited or married another man.

[f]In the year following the child's birth or separation ($t = 0$ in our models).

[g]Whether the father lived more than 100 miles away in 50% or more of the observations.

[h]Homogamy with respect to race and ethnicity is the rule rather than the exception. Amato et al. (2007) found that 93% of marriages in the year 2000 were homogamous with respect to race and ethnicity. Correspondingly, in the Fragile Families Study, 84% of cohabiting couples report the same race and ethnicity.

between child-father heterogeneity or random effects indicated by the superscripts for $\beta_{1i}^{(g)}$ and $\beta_2^{(g)}$ in Eq. (1); here again $g$ indicates that the parameters are allowed to vary by latent group/class membership, and the $i$ subscript indicates residual between-father heterogeneity on the linear time trend, which is captured by $\zeta_{1i}$ in Eq. (2). Although the quadratic trend, $\beta_2^{(g)}$, varies across groups, no within-group father-specific residual heterogeneity is estimated, as indicated by the omission of the $i$ subscript in Eq. (1) and lack of $\zeta$ (or random effect) in Eq. (3).

The model depicted in Eqs. (1)–(3), as noted earlier, posits two specific forms of heterogeneity that are captured by (1) differences in mean trajectories of contact, $\beta_j^{(g)}$, across groups, $g$, and (2) and residual heterogeneity captured by random effects $\zeta_{ji}$. In the most general incarnation of the model that we estimate, initial father involvement ($\beta_{0i}^{(g)}$) and the

linear trend in involvement ($\beta_{1i}^{(g)}$) are allowed to vary between child-father pairs within classes ($\zeta_{0i}$, $\zeta_{1i}$) with variance-covariance matrix.

$$\boldsymbol{\zeta} = MVN\left(\begin{bmatrix}0\\0\end{bmatrix},\begin{bmatrix}\sigma_0^2 & \\ \sigma_{01} & \sigma_{11}^2\end{bmatrix}\right). \tag{4}$$

Notably, there is no *g* superscript, which indicates that the variance-covariance matrix of the growth parameters is held constant across groups. Imposing the constraint that $\sigma_{11}^2 = 0$ results in a random-intercept GMM, whereas the more stringent constraint that $\boldsymbol{\zeta} = 0$ results in the more restrictive latent-class growth curve model (LCGM) advocated by Nagin (2005). This restricted model allows growth heterogeneity only through group-specific mean patterns of change. In addition, we assumed that the residual variances of $y_{it}$, denoted by $\varepsilon_{it}$, are uncorrelated, normally distributed, and constant across classes, although the *t* subscript indicates that they are freely estimated across occasions.[2]

The second component of the model incorporates the covariates into a model in which class or group membership is modeled using multinomial logit equations in which the covariates hypothesized to be correlated with father contact are incorporated as the *x*-variables in models predicting group membership, *g*. Because classification is probabilistic, uncertainty in the trajectory to which a father is classified will be reflected in the standard errors associated with the regression coefficients in the multinomial equations. Moreover, there is uncertainty in the certainty with which cases are classified. For this reason, the joint estimation of parameters is preferable to a two-step procedure that first estimates group trajectories and then uses group membership from that model (and perhaps $\pi_i^{(g)}$ as weights) as an observed outcome measured without error in a second stage.

Model parameters were estimated by using Mplus v4.2 (Muthén and Muthén 2006) with robust standard errors to account for sibling clustering within maternal households and nonnormality in the father's involvement indicators. Because the likelihood function of a GMM can be complex, with a variety of local maxima leading to false solutions, we used a large number of random starting values (between 50 and 300), followed for 20 iterations, after which those parameter estimates with the most promising likelihood values (between 10 and 25) were estimated until convergence. All parameters presented below come from models in which the best likelihood was replicated at least once, suggesting that the global maximum was found.

## RESULTS

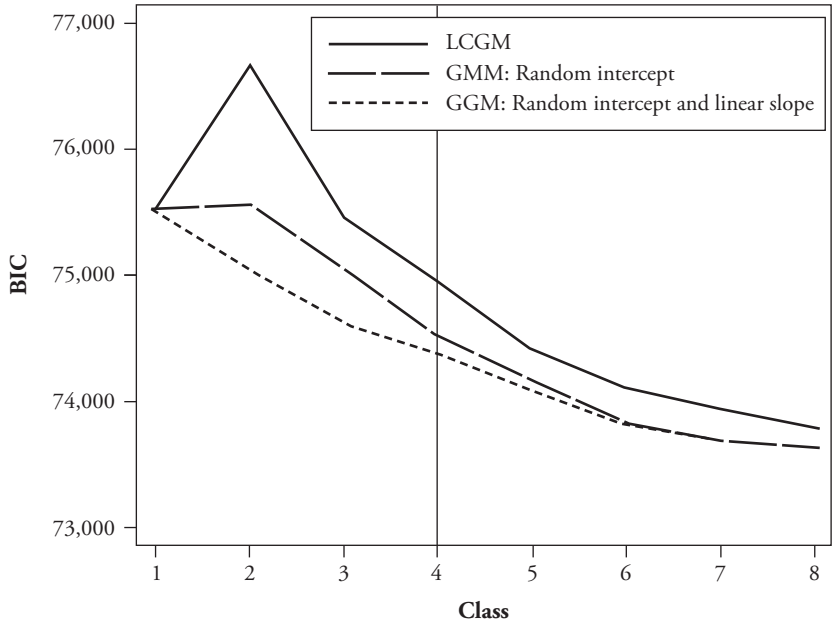
### Determining the Number of Classes

The first stage of the analysis involved finding the most parsimonious description of father contact. We first estimated the traditional LGM followed by a series of three GMMs with two to eight classes. For the three GMMs for each class grouping, the first contained no residual heterogeneity (i.e., no random effects, $\boldsymbol{\zeta}$) in either father's initial involvement or subsequent change in involvement (the LCGM), the second incorporated within-class heterogeneity in father's initial levels of involvement but no heterogeneity in growth ($\zeta_{0i}$), and the third included between child heterogeneity in both the father's initial level of involvement and subsequent change ($\zeta_{0i}$,$\zeta_{1i}$). We determined the number of classes by using a combination of Bayesian information criterion (BIC) values and the Lo-Mendell-Rubin (2001) likelihood-ratio test (LMR).[3] (See also Nylund, Asparouhov, and Muthén 2006.)

2. To further illustrate this model, the Level 1 equation for a two-component GMM ($g = 2$) would be written as $y_{it} = \pi_i^{(1)}[\beta_{0i}^{(1)} + \beta_{1i}^{(1)} time_{it} + \beta_2^{(1)} time_{it}^2 + \varepsilon_{it}] + \pi_i^{(2)}[\beta_{0i}^{(2)} + \beta_{1i}^{(2)} time_{it} + \beta_2^{(2)} time_{it}^2 + \varepsilon_{it}]$, indicating that $y_{it}$ is composed of group-specific growth models with probabilistic membership, $\pi_i^{(1)}$ and $\pi_i^{(2)}$.

3. This option is available as TECH11 under the Mplus OUTPUT option. We first estimated the models with random start values, as noted above, and then reestimated the models using the parameter values from this first model series, ensuring that the last class was the largest class (see Muthén and Muthén 2006: chapter 17).

**Figure 1. Model Selection Using BIC Criteria**



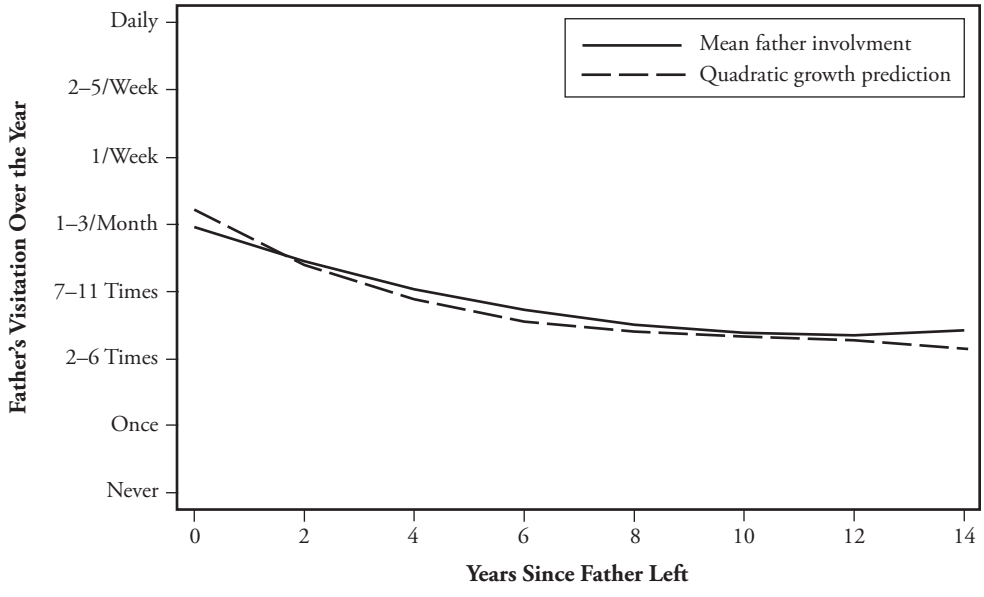

Model comparisons based on BIC values are presented in Figure 1. The decreasing BIC values suggest that the mixture models fit better than the traditional single population LGM,[4] and that within each model set for a given number of classes, the most general GMM including within-class heterogeneity in growth provided a better fit than the more restrictive models up through the four-class solution. Model fit, in general, improved consistently as the number of classes increased, although there was a clear diminishing of returns in the higher-order models. The LMR was nonsignificant in the four- and five-class comparison for the most general GMM, indicating that the four-class solution was preferred. We also visually examined models with four, five, and six classes. The higher-order models did not appear to add much information to the four-class model. Instead, these solutions essentially split groups in the four-class model into subgroups that differed in relatively minor ways. Consequently, on the basis of statistical criteria as well as parsimony, we selected the four-class model (Nagin 2005).

## Patterns of Father Contact

Visualizing traditional growth models is relatively easy because heterogeneity in the growth parameters is assumed to be normally distributed around a single archetypal pattern of change. The GMM allows the joint distribution of the growth parameters to be highly nonnormal, so the GMM can be used to model (a) nonnormality in developmental patterns (i.e., semiparametric regression) and/or (b) latent groupings that are evidenced by

4. The BIC values for the one-class model included heterogeneity in the quadratic term and an additional cubic term. This model was compared with the GMMs because the additional terms resulted in a more favorable BIC value than the quadratic growth model, making the model comparisons stricter.

**Figure 2. Mean and Single-Population Quadratic Growth Model Change in Father Contact Over Time**




nonnormality in the estimated posterior distribution of the growth parameters. Traditional approaches to modeling fathers' trajectories after they leave their children's homes, such as the aggregate mean change depicted in Figure 2, suggest a nonlinear monotonic decrease in involvement over time. This pattern is consistent with prior studies in suggesting that the "typical" nonresident father follows a trajectory of decreasing involvement, declining from 1–3 times per month to somewhere between 7–11 and 2–6 times per year. As we discussed earlier, however, heterogeneous latent structure models fit the data far better than traditional single-population approaches, despite the fact that a quadratic growth curve, as seen in Figure 2, captures the mean pattern of change in paternal involvement reasonably well. The fundamental issue in this case is that the single-population mean pattern of change does not adequately represent the variation in father contact.

Table 2 shows the growth parameters for the four classes. The intercepts varied widely across groups, with Classes 1 and 3 (high-stable and high-decreasing, respectively) having especially high intercepts (indicating frequent contact during the first year) and Classes 2 and 4 (low-stable and low-increasing, respectively) having especially low intercepts (indicating minimal contact during the first year). The linear growth trends were significant for all classes, and three of the four quadratic terms also were significant, indicating that most of the trajectories had a curvilinear component. Accounting for the class structure did not completely account for heterogeneity in father involvement, as indicated by the significant residual variances.

Two types of proportions are presented at the bottom of Table 2. The first is the sample proportion, which is the proportion of the fathers in the sample that fall into a given category based on their most likely membership probability. The second proportion is based on the estimated posterior distribution of the growth parameters and is an

**Table 2. Intercepts, Growth Parameters, and Variance Components**

| Parameters | Quadratic Growth Curve | Class 1: High-Stable | Class 2: Low-Stable | Class 3: High-Decreasing | Class 4: Low-Increasing |
|---|---|---|---|---|---|
| Growth Parameters | | | | | |
| Intercept | 3.966* | 5.584* | 1.069* | 5.127* | 1.689* |
| | (0.056) | (0.082) | (0.093) | (0.139) | (0.549) |
| Linear growth | –0.279* | –0.157* | –0.080* | –0.884* | 0.828* |
| | (0.014) | (0.033) | (0.024) | (0.048) | (0.178) |
| Quadratic growth | 0.012* | 0.005 | 0.005* | 0.048* | –0.061* |
| | (0.001) | (0.004) | (0.002) | (0.004) | (0.011) |
| Variance Components (variances) | | | | | |
| Intercept | 4.073* | 0.722* | 0.722* | 0.722* | 0.722* |
| | (0.210) | (0.097) | (0.097) | (0.097) | (0.097) |
| Linear term | 0.192* | 0.016* | 0.016* | 0.016* | 0.016* |
| | (0.020) | (0.002) | (0.002) | (0.002) | (0.002) |
| Quadratic term | 0.001* | — | — | — | — |
| | (0.000) | | | | |
| Sample | | | | | |
| *N* | 4,864 | 2,056 | 1,646 | 876 | 286 |
| Sample proportion | 1.000 | 0.423 | 0.338 | 0.180 | 0.059 |
| Estimated posterior proportion | 1.000 | 0.376 | 0.321 | 0.226 | 0.077 |

*Note:* Standard errors are shown in parentheses.

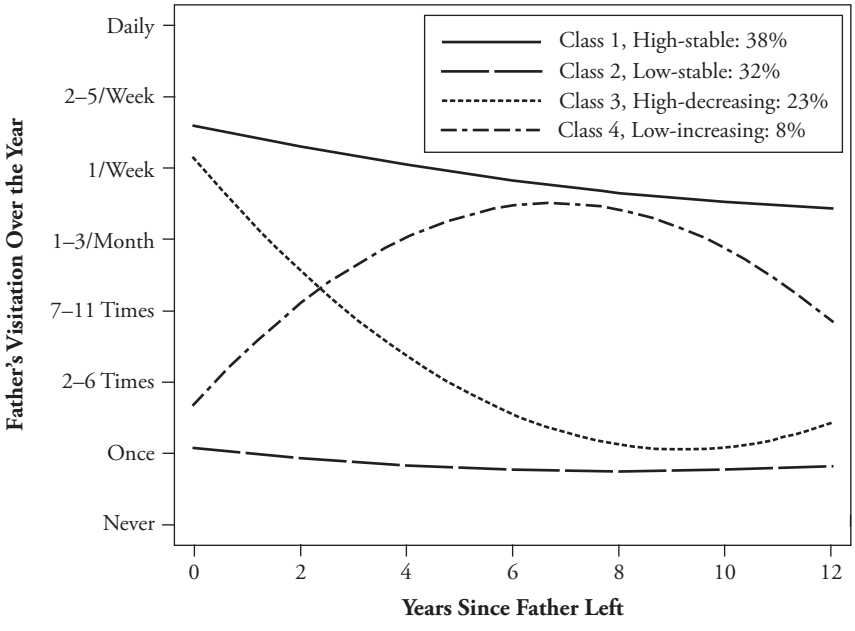
*$z$ ratio > 1.96

estimate of the number of fathers in the population that fall into each of the four patterns of nonresident involvement. Although these proportions vary somewhat, the rank order is the same, with Class 1 (high-stable) being the most common and Class 4 (low-increasing) being the least common.

Trajectories for the four-class model are displayed in Figure 3. Although we used all 14 years of data to estimate the statistical models, the number of cases, especially in the smallest class (Class 4, low-increasing), was small at the final period of observation. Consequently, the figure is truncated at 12 years. High-stable contact (Class 1), which represented 38% of fathers, comprised men who maintained a consistently high level of contact with their children. These fathers showed a slight (but significant) decline over time but continued to see their children approximately once per week. Low-stable contact (Class 2), which represented 32% of fathers, comprised men who had minimal contact with their children, beginning with the first year after separation. Taken together, these results reveal that the majority of nonresident fathers (about two-thirds) were consistently either highly involved or minimally involved with their children. In other words, the assumption that *most* fathers follow a trajectory of markedly decreasing contact with their children is not supported.

Class 3 represented 23% of fathers. These fathers started off with high levels of contact during the first year (visiting about once per week) but declined to a minimal level (once per year) after 8 years. This is the pattern that many observers think of as typical. Finally, fathers in Class 4 (8%) displayed a pattern of minimal involvement in the first year following separation but increased their frequency of contact in subsequent years. After six years, these men had a relatively high level of contact, second only to high-stable (Class 1) fathers. These fathers may represent the "divorce activated" fathers described by Hetherington and Kelly (2002). The curvilinear trend indicates a decreasing level of contact after

**Figure 3. Patterns of Father Contact From the Four-Category/Class Model With Population Estimates of the Proportion of Fathers in Each Category/Class**




7 to 8 years, although these fathers continued to see their children more often than fathers in Classes 2 (low-stable) and 3 (high-decreasing).

## Distinguishing Between the Trajectories

Table 3 shows the results from a multinomial logistic regression analysis predicting nonresident father membership in the four classes. Having four groups requires six columns of data to show all possible comparisons. To supplement this analysis, Appendix Table A1 contains descriptive statistics for fathers in each latent class.

We assumed that fathers would exhibit trajectories involving frequent contact when their children were older (rather than younger) at the time of separation. Row 1 in Table 3 shows that as children's ages at separation increased, fathers were less likely to be in the low-stable group (Class 2) than in the high-stable group (Class 1, the omitted category). Row 1 also reveals that child age was associated with being in Classes 3 (high-decreasing) and 4 (low-increasing) rather than Class 2 (low-stable). This variable, therefore, primarily distinguished low-stable fathers (who had a continuously low level of involvement) from fathers in all other classes. Consistent with our expectations, fathers were especially likely to exhibit a pattern of minimal contact when their children were relatively young at the time of separation.

We also hypothesized that being born into marriage would be associated with trajectories of relatively frequent contact. The results for this variable were comparable to the child age variable. That is, fathers in the low-stable group (Class 2) were less likely to have had their children within marriage than were fathers in the other three groups.

**Table 3. Multinomial Logistic Regression Results**

| | Class 1 (ref.) | | | | | | Class 2 (ref.) | | | | Class 3 (ref.) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Covariates | C-2 | exp(b) | C-3 | exp(b) | C-4 | exp(b) | C-3 | exp(b) | C-4 | exp(b) | C-4 | exp(b) |
| Child's Age at Time of Separation | –0.12* | 0.88 | 0.01 | 1.01 | –0.02 | 0.99 | 0.13* | 1.14 | 0.12* | 1.13 | 0.02 | 0.98 |
| | (0.03) | | (0.03) | | (0.05) | | (0.03) | | (0.03) | | (0.05) | |
| Child Born Into Marriage | –0.44* | 0.64 | 0.09 | 1.10 | 0.00 | 1.00 | 0.54* | 1.71 | 0.44* | 1.56 | –0.10 | 0.91 |
| | (0.19) | | (0.18) | | (0.29) | | (0.22) | | (0.19) | | (0.29) | |
| Mother's Education | –0.11* | 0.90 | –0.01 | 0.99 | –0.04 | 0.96 | 0.10* | 1.11 | 0.11* | 1.12 | –0.03 | 0.97 |
| | (0.05) | | (0.03) | | (0.09) | | (0.05) | | (0.05) | | (0.08) | |
| Mother's Age at Birth | –0.09* | 0.92 | –0.04† | 0.96 | –0.10† | 0.91 | 0.05* | 1.05 | 0.09* | 1.09 | –0.06 | 0.94 |
| | (0.02) | | (0.02) | | (0.05) | | (0.02) | | (0.02) | | (0.04) | |
| Father's Payment of Child Support | –0.59* | 0.56 | 0.04 | 1.04 | 0.01 | 1.01 | 0.62* | 1.87 | 0.59* | 1.79 | –0.03 | 0.97 |
| | (0.16) | | (0.18) | | (0.30) | | (0.20) | | (0.16) | | (0.28) | |
| Child Is Female | 0.20† | 1.22 | 0.10 | 1.11 | –0.12 | 0.89 | –0.09 | 0.91 | –0.20† | 0.82 | –0.23 | 0.80 |
| | (0.11) | | (0.12) | | (0.19) | | (0.15) | | (0.11) | | (0.19) | |
| Mother Repartnered | 0.22 | 1.24 | –0.02 | 0.98 | –0.21 | 0.81 | –0.24 | 0.79 | –0.22 | 0.80 | –0.20 | 0.82 |
| | (0.16) | | (0.16) | | (0.28) | | (0.19) | | (0.16) | | (0.27) | |
| Father Initially Lived > 100 Miles | 3.76* | 43.03 | 1.17 | 3.22 | 4.07* | 58.50 | –2.59* | 0.07 | –3.76* | 0.02 | 2.90* | 18.17 |
| | (0.94) | | (0.98) | | (0.97) | | (0.32) | | (0.94) | | (0.46) | |
| Father Averaged Living > 100 Miles | 5.48* | 238.7 | 5.46* | 234.9 | 2.67† | 14.43 | –0.02 | 0.98 | –5.48* | 0.00 | –2.79* | 0.06 |
| | (1.39) | | (1.38) | | (1.46) | | (0.27) | | (1.39) | | (0.41) | |
| Child's Race/Ethnicity Black | –0.09 | 0.92 | 0.43* | 1.54 | 0.46 | 1.59 | 0.52* | 1.69 | 0.09 | 1.09 | 0.03 | 1.03 |
| | (0.20) | | (0.21) | | (0.33) | | (0.25) | | (0.20) | | (0.33) | |
| Child's Race/Ethnicity Hispanic | 0.33 | 1.39 | 0.47* | 1.59 | 0.31 | 1.36 | 0.14 | 1.15 | –0.33 | 0.72 | –0.16 | 0.86 |
| | (0.22) | | (0.23) | | (0.38) | | (0.25) | | (0.22) | | (0.37) | |
| Intercept | –1.02* | | –1.26* | | –2.24* | | –0.25 | | 1.02* | | –0.98* | |
| | (0.20) | | (0.25) | | (0.41) | | (0.28) | | (0.20) | | (0.40) | |

*Notes:* Class 1: high-stable; Class 2: low-stable; Class 3: high-decreasing; Class 4: low-increasing. Standard errors are shown in parentheses. $N = 4{,}864$.

†$z$ ratio > 1.64; *$z$ ratio > 1.96

Mothers (and perhaps fathers) tended to have fewer years of education in the low-stable group (Class 2) than in the other three groups. Similarly, mothers (and perhaps fathers) tended to be younger at the time of the child's birth in the low-stable (Class 2) than in the other three groups. The same pattern appeared with respect to men's payment of child support, with mothers in the low-stable group being the least likely to receive it. This latter finding is consistent with prior research indicating that contact and paying child support are positively correlated. Taken together, all the findings presented thus far indicate that a pattern of low-stable contact is linked with a lack of maternal and paternal resources.

Although a few studies have suggested that fathers maintain more-frequent contact with sons than daughters, the present analysis provided little support for this notion. Child gender yielded only two marginally significant results, and these probably should not be overinterpreted. We assumed that maternal repartnering would be associated with trajectories of low or decreasing involvement on the part of fathers. This variable, however, did not distinguish significantly between any groups of fathers.

The two variables dealing with geographical distance between fathers and children yielded the largest numbers of significant comparisons. Fathers in the low-stable group (Class 2) were more likely than fathers in any other group to live more than 100 miles from their children in the year following separation. In addition, fathers in the low-increasing group (Class 4) were more likely than fathers in the high-stable group (Class 1) and the high-decreasing group (Class 3) to live more than 100 miles away in the first year. These results make sense, given that distance makes it difficult for men to maintain frequent contact following separation.

With respect to average distance during the period of observation, fathers in the high-stable group (Class 1) lived closer to their children than did fathers in the other three groups. In addition, fathers in the low-increasing group (Class 4) averaged less distance from their children than did fathers in the low-stable (Class 2) and high-decreasing groups (Class 3). These results cast some light on the differences between fathers in Classes 3 and 4. Fathers who showed an initially high level of contact followed by a decrease (Class 3) tended to live close to their children in the first year but lived farther away in later years. In contrast, fathers who showed an initially low level of contact followed by an increase (Class 4) tended to live far away in the first year but lived closer in subsequent years. For men in these two classes, changes in contact were bound with changes in their geographical proximity to children. We cannot tell from the data whether the change in distance was due to the mother moving, the father moving, or both. Nevertheless, proximity was closely related to instability in men's pattern of involvement.

Black children were more likely to have fathers in the high-decreasing group (Class 3) than in the high-stable (Class 1) or low-stable (Class 2) groups. Black children also appeared to be overrepresented in the low-increasing group (Class 4), although these differences were not significant in the multivariate analysis (compare Table 3 with the appendix). Taken together, these results suggest that fathers in black families tended to show more instability in their patterns of contact than did fathers in white families. This finding may cast some light on why previous studies have yielded inconsistent evidence on the frequency of paternal involvement in black families. Fathers of Hispanic children were more likely to be in the high-decreasing group (Class 3) than in the high-stable group (Class 1), although this was the only significant difference that appeared for this group. Nevertheless, this finding is consistent with studies showing comparatively low levels of contact among Hispanic fathers (King 1994; King et al. 2004; Seltzer and Bianchi 1988).

## DISCUSSION

The present study had two goals. First, we attempted to determine the number, nature, and frequency of nonresident fathers' contact trajectories. With the data from all fathers pooled, our analysis (Figure 1) replicated previous studies in showing a modest pattern of

decline in contact over time (Furstenberg et al. 1983; Maccoby and Mnookin 1992; Seltzer 1991). This result has led many observers to conclude erroneously that most nonresident fathers gradually decrease their level of involvement with children. Our analysis, however, revealed four latent classes, and only one (Class 3) reflected a consistent and substantial pattern of decline. Although high-stable contact (Class 1) fathers also decreased their level of contact, the amount of decline was minor, and even after 12 years, their level of involvement was high in absolute terms. The two largest classes, which reflected high-stable and low-stable contact, exhibited little change over the 12-year period, and together these two groups represented about two-thirds of nonresident fathers. With respect to patterns of nonresident father contact, stability is more common than change.

Our second goal was to locate variables that distinguished between fathers who followed different trajectories. The largest group of fathers exhibited a consistently high level of contact with their children. Compared with the other groups, children in this group tended to be older at the time of separation, were more likely to have been born within marriage, had older mothers, had better-educated mothers, and were more likely to have fathers who paid child support. In addition, these fathers lived close to their children's households in the first year postseparation and in future years. Presumably, living close to their children not only allowed opportunities for frequent face-to-face meetings but also reflected a desire on the part of these men (and perhaps their former partners) to avoid geographical barriers to involvement. Although we do not have data on custody and access arrangements, it is likely that many of these men had generous agreements (or parenting plans) or some form of joint custody (Braver and O'Connell 1998; Nord and Zill 1996). We suspect that these men also had positive relations with the children's mother—a factor that has been shown to be a predictor of paternal contact (Braver and O'Connell 1998; King and Heard 1999).

The second largest group of fathers, those with a low-stable pattern of involvement, had little or no contact with their children starting in the first year following separation. The children of these fathers were relatively young at the time of separation and, correspondingly, the mothers of these children tended to be relatively young at the time of birth. These mothers had the lowest level of education, and they were especially likely to have had their children outside of marriage. In addition, these fathers were the least likely to pay child support. Finally, these fathers tended to live more than 100 miles from their children during the first year after separation, and most of these men maintained this geographical distance. Given these characteristics, it is not surprising that these fathers were minimally involved in their children's lives.

Fathers with a high-decreasing pattern of contact—which represented slightly less than one-quarter of all fathers—exhibited a trajectory that many observers think of as typical. These fathers saw their children frequently during the first year after separation (once weekly or more). But with the passage of time, contact became less frequent, and after eight years, these men were seeing their children only a few times per year. Nevertheless, many of these fathers made regular child support payments, which suggests that they may have substituted economic support for personal involvement. These men tended to live close to their children during the first year, which made contact easier. After the first year, however, many of these men relocated (or their children's mothers relocated), resulting in greater geographical distance. We do not know whether these relocations reflect a weak commitment to parenthood among these men, an attempt by mothers to minimize contact with the ex-spouse, or economic necessity on the part of one or both parents. Whatever the reason, living far away from one's children clearly creates obstacles to face-to-face contact.

Finally, low-increasing fathers represent a small (8%) but interesting group. These men may be the "divorce activated" fathers described by Hetherington and Kelly (2002). Although they tended to live a great distance from their children during the first year following separation, they did not maintain this distance over time. It is not clear whether moving closer to their children was motivated by a desire to become more involved in

their children's lives or by other factors (such as a new job or remarriage). Nevertheless, it appears that geographical proximity to their children made it possible for these men to increase their level of contact.

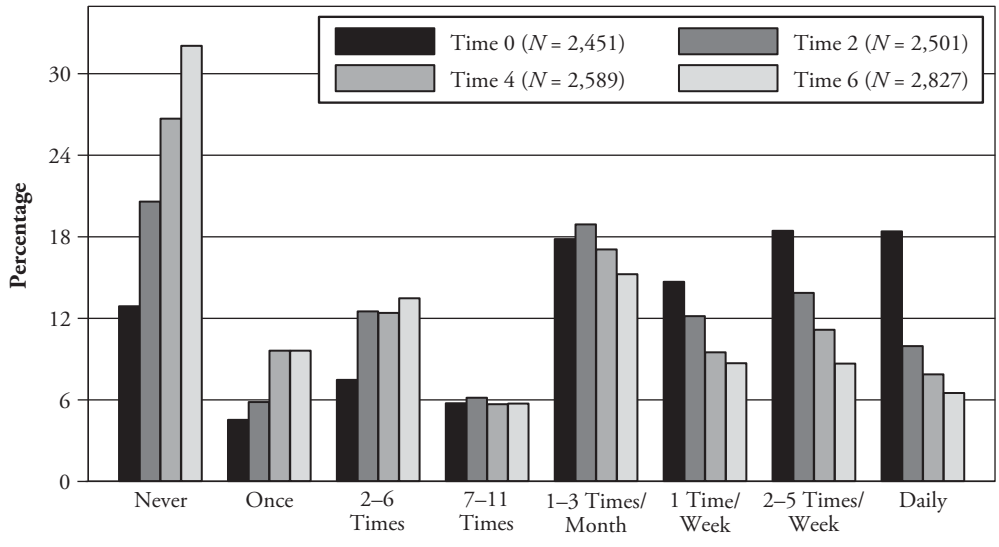
Like all studies, our study included some limitations. A major limitation was the restricted information available about fathers. For example, we lacked data on paternal employment, which some studies suggest is an important predictor of contact (Landale and Oropesa 2001). Similarly, we lacked data on whether fathers had children in new unions (Manning and Smock 1999). With respect to geographical distance, we do not know whether the decision to move was made by fathers or mothers. In addition, it is important to note that the oldest NLSY79 children were born to the youngest mothers. Because younger women in the sample had more time to experience a union disruption, their children are more likely to be represented in the data. Moreover, although our sample includes the great majority of nonmarital births, it does not include children who experienced parental divorce after the final year of data collection. Finally, mothers provided the data on paternal contact. Studies have shown that resident mothers report less-frequent contact than do nonresident fathers (Braver and O'Connell 1998). The proportions of men in various classes may have differed if fathers, rather than mothers, were the respondents.

Despite these limitations, the present study has implications for public policy and future research. Based on the assumption that contact with nonresident fathers is beneficial for children, a large number of programs and interventions are attempting to strengthen ties between children and their nonresident fathers. For example, about half of all family courts mandate parent education classes for divorcing parents, and a central aim of these programs is to keep nonresident parents (usually fathers) actively involved with their children (Emery, Kitzmann, and Waldron 1999). In addition, many states have initiated Responsible Fatherhood programs to help fathers meet their child support obligations, increase fathers' access to their children, and encourage better quality parenting from fathers (Pearson et al. 2003). In 2006, the federal government budgeted $50 million per year for five years to fund programs that promote responsible fatherhood among single fathers (Roberts 2006).

The present study suggests that it is a mistake to lump all nonresident fathers into a single category, and it raises the question of whether different interventions may be necessary for different types of fathers. For example, men in Class 2 (who exhibited continuously minimal involvement from the first year following separation) may require different interventions than men in Class 3 (who started with high levels of contact but declined substantially in subsequent years). Correspondingly, fathers in Class 1 (who maintained a continuously high level of contact) probably require minimal assistance and, hence, it may not be necessary to make these men a central focus of fatherhood programs.

With respect to future studies, the present research suggests that it is a mistake to assume that the majority of nonresident fathers follow a pattern of increasing disengagement from their children. Most fathers do *not* appear to exhibit a marked pattern of declining contact following separation, and the majority of trajectories appear to be stable over long periods of time. Moreover, changes in contact appear to be largely related to changes in fathers' proximity to children. Although the NLSY contained relatively little information on fathers (one of the major limitations of our study), we were able to show that a number of factors significantly discriminate between men who followed different trajectories. Because our goal was to establish a preliminary profile of men who fall into these groups, a causal analysis was beyond the scope of the current study. We recommend that future researchers not only continue to identify variables associated with stability and change in nonresident fathers' patterns of contact, but also attempt to sort out some of the relevant causal issues. For example, do changes in father-child proximity precede or follow changes in father-child contact? Which parent tends to initiate these moves and for what reasons? Answering these questions would cast light on the processes underlying trajectories of change versus stability.

**Appendix Figure A1. Percentages in Each Contact Response Category for Times 0, 2, 4, and 6 Years After the Father Has Left the Home**




**Appendix Table A1. Covariate Means by Latent Classes**

| Variable | Class 1: High-Stable | Class 2: Low-Stable | Class 3: High-Decreasing | Class 4: Low-Increasing |
|---|---|---|---|---|
| Child's Age at Time of Separation | 4.090 [3.923,4.258] | 3.001 [2.852,3.150] | 4.158 [3.975,4.340] | 3.739 [3.443,4.035] |
| Child Born Into Marriage | 0.495 [0.474,0.516] | 0.373 [0.351,0.395] | 0.517 [0.494,0.540] | 0.451 [0.414,0.488] |
| Mother's Education | 11.769 [11.676,11.862] | 11.259 [11.165,11.354] | 11.701 [11.584,11.817] | 11.445 [11.307,11.582] |
| Mother's Age at Birth | 24.454 [24.234,24.674] | 21.930 [21.709,22.150] | 23.618 [23.392,23.843] | 22.767 [22.415,23.118] |
| Father's Payment of Child Support | 0.528 [0.507,0.549] | 0.434 [0.412,0.457] | 0.569 [0.546,0.591] | 0.574 [0.538,0.611] |
| Child Is Female | 0.496 [0.475,0.516] | 0.518 [0.495,0.540] | 0.506 [0.483,0.529] | 0.450 [0.414,0.487] |
| Mother Repartnered | 0.370 [0.350,0.390] | 0.444 [0.422,0.467] | 0.388 [0.366,0.411] | 0.361 [0.326,0.396] |
| Father Initially Lived > 100 Miles | 0.007 [0.004,0.009] | 0.615 [0.593,0.636] | 0.131 [0.115,0.146] | 0.314 [0.277,0.351] |
| Father Averaged Living > 100 Miles | 0.001 [0.000,0.002] | 0.623 [0.602,0.644] | 0.271 [0.249,0.293] | 0.122 [0.099,0.145] |

*(continued)*

*(Appendix Table A1, continued)*

| Variable | Class 1: High-Stable | Class 2: Low-Stable | Class 3: High-Decreasing | Class 4: Low-Increasing |
|---|---|---|---|---|
| Child's Race/Ethnicity Black | 0.415 [0.394,0.435] | 0.413 [0.391,0.435] | 0.459 [0.435,0.482] | 0.523 [0.486,0.560] |
| Child's Race/Ethnicity Hispanic | 0.167 [0.151,0.182] | 0.219 [0.200,0.238] | 0.213 [0.194,0.232] | 0.183 [0.154,0.211] |
| Mean Age Over Study Period | 8.828 [8.669,8.988] | 9.354 [9.196,9.512] | 9.305 [9.144,9.466] | 9.688 [9.450,9.925] |
| Number of Observations on *Y* | 3.545 [3.461,3.629] | 3.826 [3.734,3.918] | 4.048 [3.952,4.144] | 4.021 [3.885,4.158] |
| *N* | 2,056 | 1,646 | 876 | 286 |
| Sample Proportion | .423 | .338 | .180 | .059 |
| Estimated Posterior Proportion | .376 | .321 | .226 | .077 |

*Note:* 95% confidence intervals are in brackets.

## REFERENCES


Amato, P.R., A. Booth, D.R. Johnson, and S.J. Rogers. 2007. *Alone Together: How Marriage in America Is Changing*. Cambridge, MA: Harvard University Press.

Amato, P.R. and J. Gilbreth. 1999. "Nonresident Fathers and Children's Well-being: A Meta-Analysis." *Journal of Marriage and the Family* 61:557–73.

Aquilino, W.S. 2006. "Noncustodial Father-Child Relationship From Adolescence Into Young Adulthood." *Journal of Marriage and Family* 68: 929-46.

Arditti, J.A. and T.Z. Keith. 1993. "Visitation Frequency, Child Support Payment, and the Father-Child Relationship Postdivorce." *Journal of Marriage and the Family* 55:699–712.

Barber, J. and A. Evans. 2006. "The Intersection Among Unintended, Premarital, and Teenage Childbearing in the U.S." Report 06-608. Population Studies Center, Ann Arbor, MI.

Bartfeld, J. 2000. "Child Support and the Postdivorce Economic Well-being of Mothers, Fathers, and Children." *Demography* 37:203–13.

Bollen, K.A. and P.J. Curran. 2006. *Curve Models: A Structural Equation Perspective*. Hoboken, NJ: John Wiley & Sons.

Braver, S.L. and D. O'Connell. 1998. *Divorced Dads: Shattering the Myths*. New York: Tarcher Putnam.

Bumpass, L. 1990. "What's Happening to the Family?: Interactions Between Demographic and Institutional Change." *Demography* 27:483–98.

Carlson, M., S. McLanahan, and P. England. 2004. "Union Formation in Fragile Families." *Demography* 41:237–61.

Center for Human Resources Research. 2004. "A Guide to the National Longitudinal Survey of Youth 1979." Columbus, OH: The Ohio State University.

Clarke-Steward, A. and C. Brentano. 2006. *Divorce: Causes and Consequences*. New Haven, CT: Yale University Press.

Cooksey, E.C. and P.H. Craig. 1998. "Parenting From a Distance: The Effects of Paternal Characteristics on Contact Between Nonresidential Fathers and Their Children." *Demography* 35:187–201.

Eggebeen, D.J. 2002. "The Changing Course of Fatherhood." *Journal of Family Issues* 23:486–506.

Emery, R., K.M. Kitzmann, and M. Waldron. 1999. "Psychological Interventions for Separated and Divorced Families." Pp. 323–44 in *Coping With Divorce, Single Parenting, and Remarriage: A Risk and Resiliency Perspective,* edited by E.M. Hetherington. Mahwah, NJ: Lawrence Erlbaum.

Furstenberg, F.F., C.W. Nord, J.L. Peterson, and N. Zill. 1983. "The Life Course of Children of Divorce: Marital Disruption and Parental Contact." *American Sociological Review* 48: 656–68.

Hetherington, E.M. 1993. "An Overview of the Virginia Longitudinal Study of Divorce and Remarriage With a Focus on Early Adolescence." *Journal of Family Psychology* 7:39–56.

Hetherington, E.M. and J. Kelly. 2002. *For Better or for Worse: Divorce Reconsidered*. New York: Norton.

Hofferth, S.L., N. Cabrera, M. Carlson, R.L. Coley, R. Day, and H. Schindler. 2007. "Resident Father Involvement and Social Fathering." Pp. 335–74 in *Handbook of Measurement Issues in Family Research,* edited by S.L. Hofferth and L.M. Casper. Mahway, NJ: Lawrence Erlbaum.

Ihinger-Tallman, M., K. Pasley, and C. Buehler. 1993. "Developing a Middle-Range Theory of Father Involvement Postdivorce." *Journal of Family Issues* 14:550–71.

Juby, H., J.-M. Billette, B. Laplante, and C. Le Bourdais. 2007. "Nonresident Fathers and Children: Parents' New Unions and Frequency of Contact." *Journal of Family Issues* 28:1220–45.

King, V. 1994. "Variation in the Consequences of Nonresident Father Involvement for Children's Well-being." *Journal of Marriage and the Family* 56:963–72.

King, V., K.M. Harris, and H.E. Heard. 2004. "Racial and Ethnic Diversity in Nonresident Father Involvement." *Journal of Marriage and Family* 66:1–20.

King, V. and H.E. Heard. 1999. "Nonresident Father Visitation, Parental Conflict, and Mother's Satisfaction: What's Best for Child Well-being?" *Journal of Marriage and Family* 61:385–96.

Lamb, M.E. 1991. "Noncustodial Fathers and Their Impact on the Children of Divorce." Pp. 105–25 in *The Postdivorce Family: Children, Parenting, and Society,* edited by R.A. Thompson and P.R. Amato. Thousand Oaks, CA: Sage Publications, Inc.

Landale, N.S. and R.S. Oropesa. 2001. "Father Involvement in the Lives of Mainland Puerto Rican Children: Contributions of Nonresident, Cohabiting and Married Fathers." *Social Forces* 79: 945–55.

Li, F., T.E. Duncan, and S.C. Duncan. 2001. "Latent Growth Modeling of Longitudinal Data: A Finite Growth Mixture Modeling Approach." *Structural Equation Modeling* 8:493–530.

Lo, Y., N.R. Mendell, and D.B. Rubin. 2001. "Testing the Number of Components in a Normal Mixture." *Biometrika* 88:767–87.

Maccoby, E.E. and R.H. Mnookin. 1992. *Dividing the Child: Social and Legal Dilemmas of Custody*. Cambridge, MA: Harvard University Press.

Manning, W.D. and P.J. Smock. 1999. "New Families and Nonresident Father-Child Visitation." *Social Forces* 78:87–116.

Manning, W.D., S.D. Stewart, and P.J. Smock. 2003. "The Complexity of Fathers' Parenting Responsibilities and Involvement With Nonresident Children." *Journal of Family Issues* 24: 645–67.

McLanahan, S., I. Garfinkel, N. Reichman, J. Teitler, M. Carlson, and C. Ajudiger. 2003. "The Fragile Families and Child Wellbeing Study: Baseline National Report." Bendheim-Thoman Center for Research on Child Well-Being, Princeton, NJ.

Mott, F. 1990. "When Is a Father Really Gone? Paternal-Child Contact in Father-Absent Homes." *Demography* 27:499–517.

Muthén, B.O. 2001. "Second-Generation Structural Equation Modeling With a Combination of Categorical and Continuous Latent Variables: New Opportunities for Latent Class/Latent Growth Modeling." Pp. 291–322 in *New Methods for the Analysis of Change,* edited by L.M. Collins and A. Sayer. Washington, DC: APA.

———. 2002. "Beyond SEM: General Latent Variable Modeling." *Behaviormetrika* 29:81–117.

———. 2004. "Latent Variable Analysis: Growth Mixture Modeling and Related Techniques for Longitudinal Data." Pp. 345–68 in *Handbook of Quantitative Methodology for the Social Sciences,* edited by D. Kaplan. Newbury Park, CA: Sage Publications.

Muthén, L.K. and B.O. Muthén. 2006. *Mplus User's Guide: Fourth Edition*. Los Angeles, CA: Muthén & Muthén.

Nagin, D. 2005. *Group-Based Modeling of Development*. Cambridge, MA: Harvard University Press.

Nepomnyaschy, L. 2007. "Child Support and Father-Child Contact: Testing Reciprocal Pathways." *Demography* 44:93–112.

Nord, C. and N. Zill. 1996. "Noncustodial Parents' Participation in Their Children's Lives: Evidence From the Survey of Income and Program Participation, Vol. I: Summary of SIPP Analysis." (DHHS-100-93-0012). U.S. Department of Health and Human Services, Washington, DC.

Nylund, K.L., T. Asparouhov, and B.O. Muthén. 2006. "Deciding on the Number of Classes in Latent Class Analysis and Growth Mixture Modeling. A Monte Carlo Simulation Study." *Structural Equation Modeling* 14:535–69.

Osborne, C., W.D. Manning, and P.J. Smock. 2007. "Married and Cohabiting Parents' Relationship Stability: A Focus on Race and Ethnicity." *Journal of Marriage and Family* 69:1345–66.

Parke, R.D. 1996. *Fatherhood*. Cambridge, MA: Harvard University Press.

Pearson, J., N. Thoennes, L. Davis, J.C. Venohr, D.A. Price, and T. Griffith. 2003. "Office of Child Support Enforcement Responsible Fatherhood Programs: Client Characteristics and Program Outcomes." Report. Available online at http://www.acf.dhhs.gov/programs/cse/pubs/2003/reports/fatherhood_programs/responsible_fatherhood_programs.pdf.

Reichman, N.E., J.O. Teitler, I. Garfinkel, and S.S. McLanahan. 2001. "The Fragile Families and Child Wellbeing Study: Sample and Design." *Children and Youth Services Review* 23:303–26.

Roberts, P. 2006. "Update on the Marriage and Fatherhood Provisions of the 2006 Federal Budget." Washington, DC: Center for Law and Social Policy.

Schoen, R. and V. Canudas-Romo. 2006. "Timing Effects on Divorce: 20th Century Experience in the United States." *Journal of Marriage and Family* 68:749–58.

Seltzer, J.A. 1991. "Relationships Between Fathers and Children Who Live Apart: The Father's Role After Separation." *Journal of Marriage and Family* 53:79–101.

———. 1998. "Fathers by Law: Effects of Joint Legal Custody on Nonresident Fathers' Involvement With Children." *Demography* 35:135–46.

Seltzer, J.A. and S.M. Bianchi. 1988. "Children's Contact With Absent Parents." *Journal of Marriage and the Family* 50:663–77.

Seltzer, J., N.C. Schaeffer, and H.W. Charng. 1989. "Family Ties After Divorce: The Relationship Between Visiting and Paying Child Support." *Journal of Marriage and the Family* 51:1013–31.

Stephens, L.S. 1996. "Will Johnny See Daddy This Week? An Empirical Test of Three Theoretical Perspectives of Postdivorce Contact." *Journal of Family Issues* 17:466–94.

Thomas, P.A., E.M. Krampe, and R.R. Newton. 2008. "Father Presence, Family Structure, and Feelings of Closeness to the Father Among Adult African American Children." *Journal of Black Studies* 38:529–46.

U.S. Census Bureau. 2006. *Statistical Abstract of the United States 2006*, Table 586. Washington, DC.